IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-19. (Canceled)

20. (Currently Amended) A superconducting cable having at least one phase comprising:

a layer of tapes comprising superconducting material;

a tubular element for supporting said layer of tapes, said tubular element comprising at least one portion made of metallic material and being in electrical contact with the layer of tapes;

a cooling circuit configured to cool the layer of tapes to a working temperature not higher than the critical temperature of the tapes, the cooling circuit comprising a fluid at a predetermined working pressure ranging between a minimum value and a maximum value, wherein deformation of the layer of tapes consequent to a temperature variation between room temperature and the working temperature is lower than critical deformation of the layer of tapes; and

a predetermined amount of conductive material of resistive type in electrical contact with the layer of tapes, the conductive material being configured to cause a maximum temperature reached by the layer of tapes in case of a short circuit to be lower than the lesser of the critical temperature of the superconducting material

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comprising the layer of tapes and the boiling temperature of said cooling fluid at a minimum working pressure of said fluid wherein said tubular element is a composite and comprises a first metallic material and a second material associated to said first material and having a thermal expansion coefficient higher than that of said first material.

21. (Previously Presented) A superconducting cable according to claim 20, wherein said layer of tapes is incorporated within a metallic coating.

22. (Previously Presented) A superconducting cable according to claim 21, wherein said superconducting material comprises at least one reinforcing foil made of metallic material.

23. (Previously Presented) A superconducting cable according to claim 22, wherein said superconducting material comprises two reinforcing foils made of metallic material coupled to opposite faces of said layer.

24. (Previously Presented) A superconducting cable according to claim 22 or 23, wherein said superconducting material is essentially pre-stressed along a longitudinal direction.

25. (Previously Presented) A superconducting cable according to claim 24, wherein the layer of superconducting material of said at least one tape comprising

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superconductive material has a pre-stress degree along a longitudinal direction (γ) of between 0.05 and 0.2%.

26. (Previously Presented) A superconducting cable according to claim 20, wherein the cable comprises a plurality of tapes comprising superconducting material spirally wound on the surface of said at least one supporting tubular element, said tapes having winding angles of between 5° and 60°.

27. (Previously Presented) A superconducting cable according to claim 23 or 24, wherein the reinforcing foil and the metallic coating of said tapes comprising superconducting material is a metal selected from the group consisting of copper, aluminum, silver, magnesium, nickel, bronze, stainless steel, beryllium, and alloys thereof.

28. (Canceled)

29. (Currently Amended) A superconducting cable according to claim 20 ~~28~~, wherein said first and second materials are formed as adjacent annular sectors.

30. (Previously Presented) A superconducting cable according to claim 29, wherein said annular sectors are arranged one after the other.

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31. (Previously Presented) A superconducting cable according to claim 29, wherein said annular sectors are spirally wound according to a winding angle of between 5° and 50°.

32. (Currently Amended) A superconducting cable according to claim 20 ~~28~~, wherein said first metallic material is a metal having a resistivity of 77 K < $5*10^{-9}$ Ωm, a specific heat at 77 K > 10^6 J/m^3K and a heat conductivity at 77 K > 5 W/mK.

33. (Currently Amended) A superconducting cable according to claim 20 ~~28~~, wherein said second material is a non metallic material having a thermal expansion coefficient higher than $17*10^{-6}$ $°C^{-1}$.

34. (Previously Presented) A superconducting cable according to claim 33, wherein said second non metallic material is a plastic material selected from the group consisting of polyamide, polytetrafluoroethylene and polyethylene.

35. (Currently Amended) A conductive element for superconducting cables comprising at least one layer of superconducting material incorporated within a metallic coating supported by a tubular element comprising a predetermined amount of metallic material with which the layer is in electrical contact, said layer of superconducting material being cooled by means of a cooling fluid to a temperature not higher than the critical temperature of the layer, wherein a predetermined amount of conducting material of resistive type is present in electrical contact with the layer of

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superconducting material, such that a maximum temperature reached by the at least one layer of superconducting material in case of short circuit is lower than the lesser of the critical temperature of the at least one layer of superconducting material and the boiling temperature of said cooling fluid at a minimum working pressure of said fluid wherein said tubular element is a composite and comprises a first metallic material and a second material associated to said first material and having a thermal expansion coefficient higher than that of said first material.

36. (Withdrawn) A method adapted to limit the induced stresses along a longitudinal direction in a tape of superconducting material of a superconducting cable comprising the steps of:

a) providing at least one tubular element for supporting a tape of superconducting material comprising a predetermined amount of metallic material, said tubular element being in electrical contact with a tape of superconducting material;

b) spirally winding said tape of superconducting material onto the surface of said at least one tubular element;

c) cooling the superconducting material to a temperature not higher than its critical temperature by means of a cooling fluid;

d) coupling at least one reinforcing foil made of metallic material to said tape of superconducting material; and

e) determining a total amount of metallic material in electrical contact with the layer of superconducting material in such a way that the maximum temperature reached by the superconducting material in case of a short circuit is lower than a minimum

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temperature between critical temperature of the superconducting material and boiling temperature of said cooling fluid at minimum working pressure of said fluid.

37. (Withdrawn) A method according to claim 36, wherein the superconducting material of said tapes of superconducting material has a pre-stress degree along a longitudinal direction (γ) of between 0.05 and 0.2%.

38. (Withdrawn) A method according to claim 36, wherein the tubular element is a composite and comprises a first metallic material and a second material associated to said first material and having a thermal expansion coefficient higher than that of said first material.

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